All Eyes on Arthropoda

The Smithsonian's new insect zoo pays belated homage to the kings of evolution.

BY JANET L. HOPSON

A giant cicada with a menacing expression peers down from a signboard as you enter the Smithsonian Natural History Museum's new insect zoo, just opened this week in Washington.

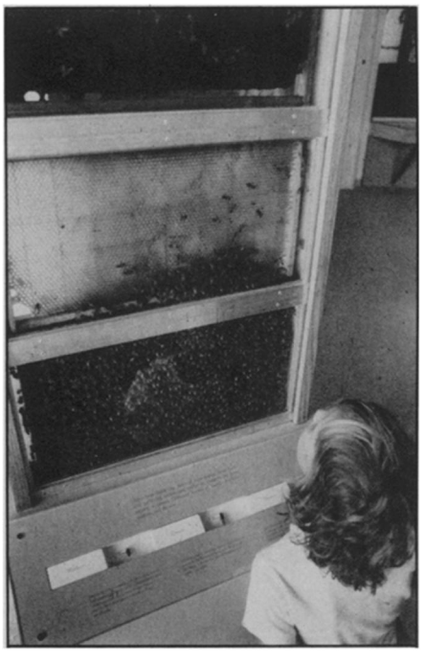
A tiny human, no taller than one spiky tarsus of the monster's foot, stands dwarfed below. In the animal world, the sign explains, the arthropod is king. Man and his vertebrate relatives barely register on the roll of animal species; 94 percent of the total are invertebrates and 83 percent of those are joint-legged arthropods (insects, crustaceans, millipedes, arachnids and centipedes).

This dominant group will still be underrepresented at the Smithsonian—and rightly so. How many, after all, would flock to a museum in which beetles, spider mites, hermit crabs and their cousins claimed more than nine-tenths of the space? But disproportional representation notwithstanding, this living insect display—the first of its kind in the United States—will finally begin to give the earth's most successful survivors a spot in the public consciousness.

"What began four years ago as a temporary, amateur insect zoo stuck off in a corner," says Smithsonian entomologist Terry Erwin, "turned out to be one of the most popular areas in the whole museum. So we decided to expand." The permanent display now houses more than a hundred arthropod species and several thousand individuals, and fills a large, sunny room on the museum's second floor.

Clear plastic cages, some free-standing, some along the walls, house most of the creatures and display their behavior. In one, a dozen huge, black Eastern Lubber grasshoppers bask and mate on a dry tree branch. In the same cube, plump tobacco hornworms suck juice from the stem of a sad-looking tomato plant. (It has to be replaced two or three times a week, a zookeeper says.)

In another plastic cage—this one red to simulate darkness inside—a group of all-too-familiar cockroaches swarm thickly over kitchen utensils. And across the room, several thousand honeybees work over the wax honeycomb inside a tall, narrow glass and aluminum case. The case is installed near the wall and is connected to the outside with a clear plastic pipe. The workers can thus gather pollen and nectar in downtown Washington. (The Mall area, with its clover and flowers, seems to provide them a decent living.)



Transparent hive has exit to outdoors.

Scorpion sucks on special water bottle.

Plant chewers: Arthropod adaptation.

Photos: Michael A. Rogers

Arthropods haven't earned their evolutionary stripes for nothing, and each of several areas within the insect zoo is devoted to explaining and demonstrating one of the group's successful adaptations to terrestrial and aquatic life:

- Russet adults, leathery black pupae and green larvae of the hickory horned devil display, in one cage, the successful methods arthropods have evolved for growing and meeting energy needs at different life-cycle stages.
- A 60-foot terrarium—complete with pond, trees, grasses and dozens of cohabiting insects—shows the arthropod knack for colonizing niches.
- A beautifully constructed diorama recreates a scene in a carboniferous swamp, 300 million years ago, to show the persistence of arthropods throughout evolutionary history. Models of dragon flies, centipedes and cockroaches—looking relatively modern except for their frighteningly large dimensions—flit and crawl through the soggy landscape.
- Several captive arthropods display the variety of size, shape and color adaptations that have made the group so successful.
- And chewing, sucking and filtering animals at work on foods of all kinds demonstrate the arthropod's collective success at eating practically anything and everything.

Raising a crop of insects in a museum—rather than pinning them in box lids—presents the staff with a new set of problems. Like finding foods without pesticides. And preventing the ants from overpopulating the terrarium. And keeping the butterflies alive with the tarantulas. "But," says Gene Behlen, head of exhibits at the museum, "we have the whole entomology department to advise us, and more than a million arthropod species to try out."

The insect zoo concept ("We call it an 'insect zoo' because people don't know what 'arthropods' are," Behlen says.) is not new. German and Japanese zoos have maintained and displayed insects for years. And the Smithsonian opening just beats the opening of the Cincinnati zoo's insect building by a proboscis. But the idea is a worthy one, nevertheless, and represents homage long overdue for evolution's joint-legged success story. □